reality suffering from the lack of men with college training.

If our colleges could turn into the profession of medicine those of their students who find within themselves a peculiar adaptability to its work, to take the place of the thousands of uneducated men who at present are attracted to it by commercial motives alone, they would accomplish a most useful work for humanity at large.

W. H. HOWELL.

JOHNS HOPKINS UNIVERSITY.

THE OPENING OF THE HALL OF NATURAL HISTORY, TRINITY COLLEGE.

ON December 7th the new Hall of Natural History of Trinity College was formally opened.

The Rev. George Williamson Smith, D.D., President of the College, delivered the address of welcome, as follows:

"It gives me great pleasure to welcome you to Trinity College on this occasion. It is the realization of what was undertaken by the trustees of Washington College when they issued their prospectus in 1824. In that prospectus we find that professors had been appointed for departments of chemistry and mineralogy, of agriculture and political economy, and of botany. A professor of natural philosophy was to be appointed at an early day. It was a radical departure from the college curriculum accepted at that time to give such a large place to scientific study, and the difference was increased by a provision that students could be admitted to 'pursue such *particular studies* as might be suited to their circumstances,' 'or as the inclination of their parents or guardians might require.' The additional announcement that 'if, in the end' of their association with the college, 'the amount of the attainments' of special students 'should be judged by the faculty to be equal to the knowledge acquired in the regular course, they might be candidates for the Degrees in Arts, which would be conferred on the students in that course,' is still regarded as revolutionary in most of our colleges.

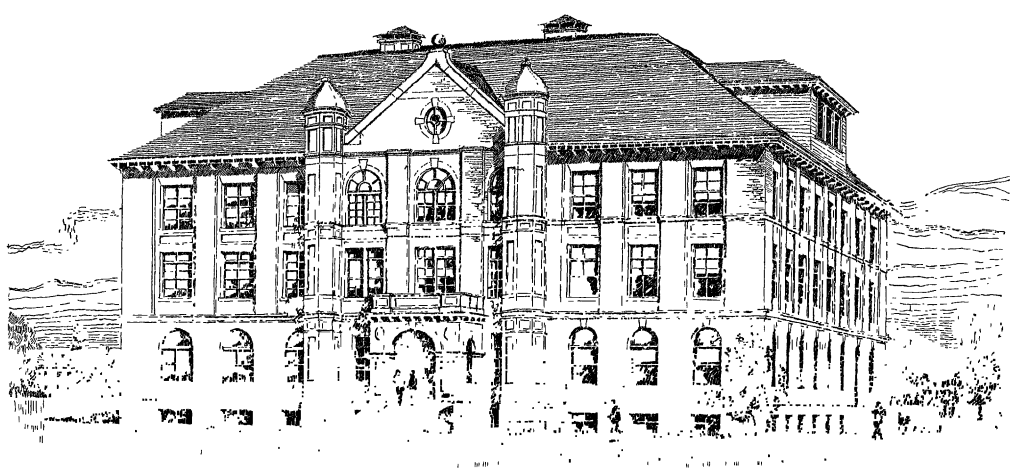


FIG. 1. The Hall of Natural History.

"The position and importance given to scientific studies attracted a large number of students who wished to prepare for the study of medicine or for scientific pursuits, and among the early students a large proportion became distinguished physicians.

Among the special students in 1829 was James H. Ward, a midshipman of the United States Navy, who was preparing for the examination for past-midshipman, and who found in Washington College the opportunities for such studies as he desired to pursue and which were cultivated in only a few places. It was largely through his instrumentality that the United States Naval Academy was founded by Bancroft in 1844.

"But the men who founded Washington College, with its startling departure from the accepted course of study, were half a century in advance of their day; and it is as fatal to a man's usefulness to be fifty years ahead of his time as to be fifty years behind it. The college was compelled to recede from its advanced position and do the work called for in its generation. But the scientific studies, though reduced, were never abandoned. A few years ago, by the generosity of alumni and friends of the college, among whom the late Junius S. Morgan, of London, and Mr. Walter Keney, of Hartford, were conspicuous, but particularly by the large gift of the late George A. Jarvis, of Brooklyn, N. Y., the laboratories for physics and chemistry were constructed and equipped. In 1888 tentative efforts were made to procure the funds for the erection of a building for the museum and department of natural history. The time was not deemed favorable and the project slept until 1893, when another effort was made. But the flurry of a threatened war with England over the Venezuelan boundary caused another postponement. In 1898 the effort was renewed; several large subscriptions were obtained, W. C. Brocklesby, an alumnus of the college, whose father had been for many years a professor in charge of the work of natural history, was engaged as architect, and to-day we have the satisfaction of seeing the completion of this part of the project of our venerated founder and his associates. In their name, as well as our own, I bid you welcome."

In addition to the addresses by Professor H. F. Osborn and Professor W. H. Howell given above, short addresses were made by Professor Hadley, of Yale; President Carter, of Williams; Professor Conn, of Wesleyan and ex-President Pynchen, of Trinity.

The following extracts from congratulatory letters to Professor Edwards were read:

"The generous support which is afforded by your countrymen to scientific institutions is in the highest degree creditable to the nation and sadly contrasts with the treatment accorded to naturalists in the old country.

"I need hardly say that I am fully aware of the splendid contributions to the various branches of natural history which have been made by members of the staff of the various universities and colleges of the United States, and I trust that the magnificent scientific reputation of such men as Louis and Alexander Agassiz, Asa Gray, T. D. Dana, and O. C. Marsh may serve as an incitement to their successors in similar lines of research, and that the mantle which they dropped may abide with future generations in Trinity College, Hartford. Believe me, dear sir,

"Very faithfully yours,

"ROBERT D. CUNNINGHAM, M.D."

PROFESSOR OF NATURAL HISTORY,
QUEEN'S COLLEGE, BELFAST, IRELAND.

"It is my wish that your new hall may receive and instruct many generations of students, and that it may inspire in many the taste for zoology.

"Very cordially yours,

"L. CUÉNOT."

PROFESSOR OF ZOOLOGY AND PHYSIOLOGY,
UNIVERSITY OF NANCY, FRANCE.

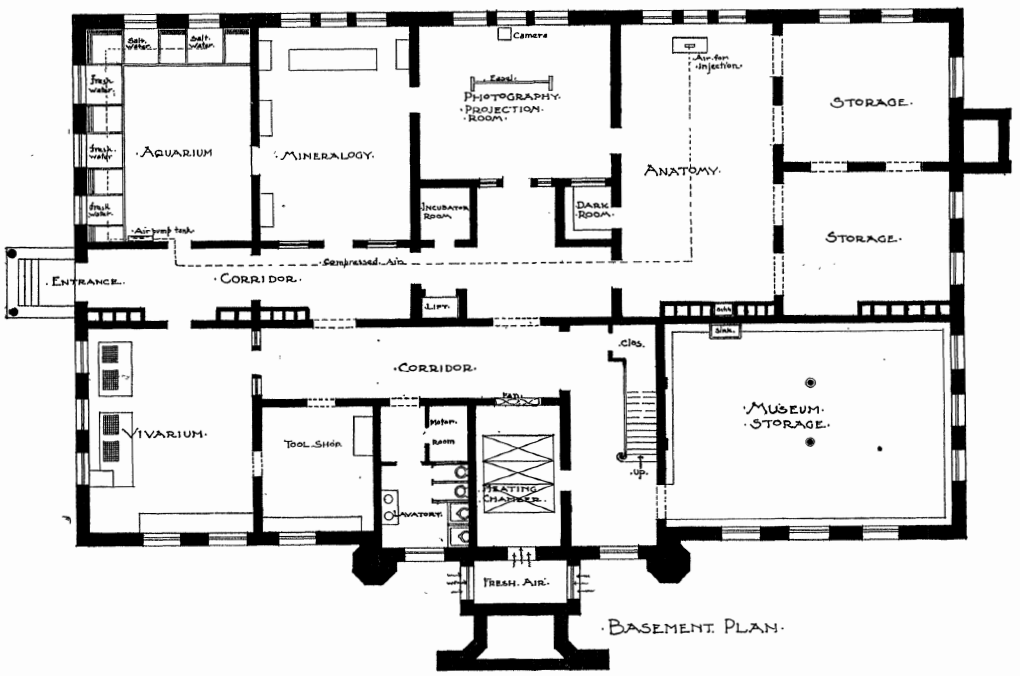
"With all good wishes for the success of your labor, I am

"Yours very faithfully,

"FRANCIS DARWIN."

CAMBRIDGE, ENGLAND,
August 15, 1900.

"I regret that distance, and the occupations that fill the life of all those who have devoted themselves to science, do not permit me to be present in person at the inauguration of the Laboratory of Natural History of your college. But I am with you in heart, and I send you in this letter my most earnest wishes for the success of your laboratory.



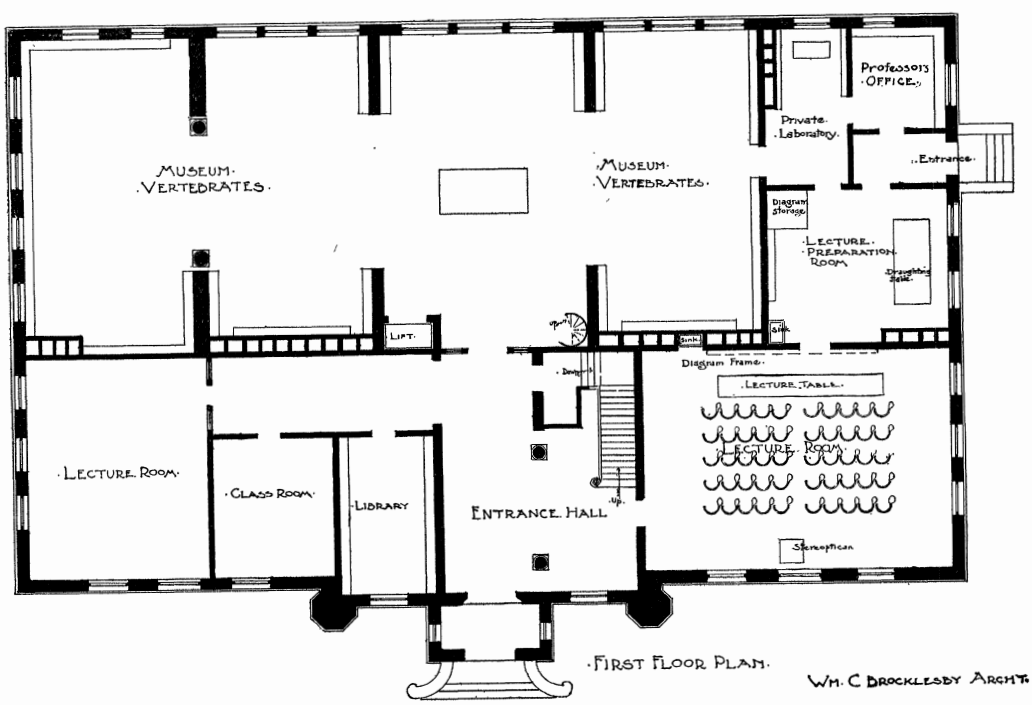
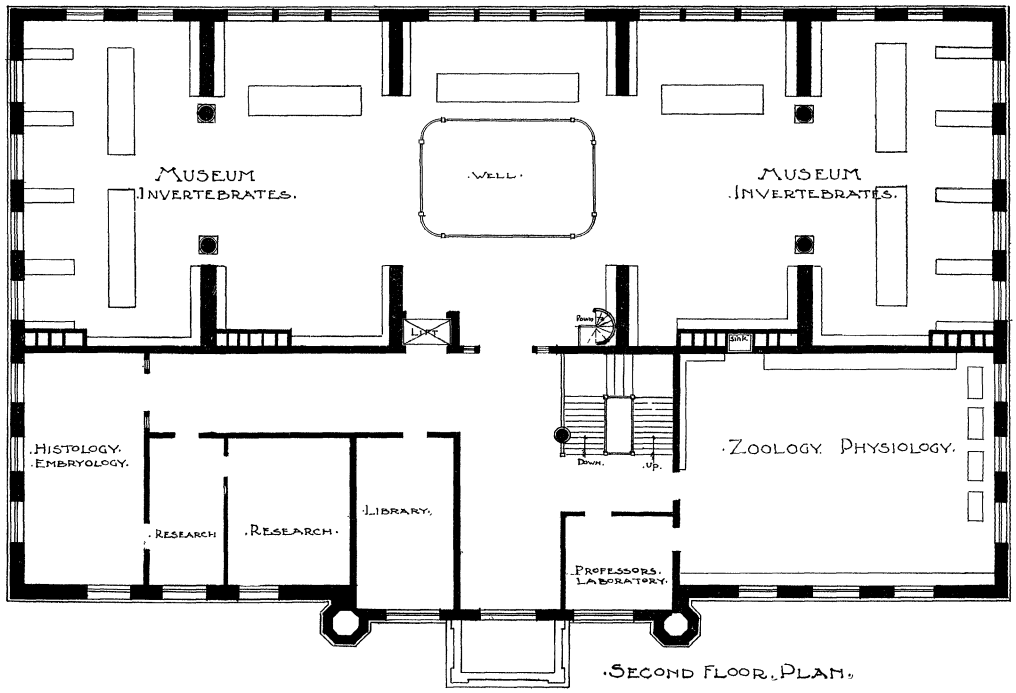


FIG. 2. Hall of Natural History.



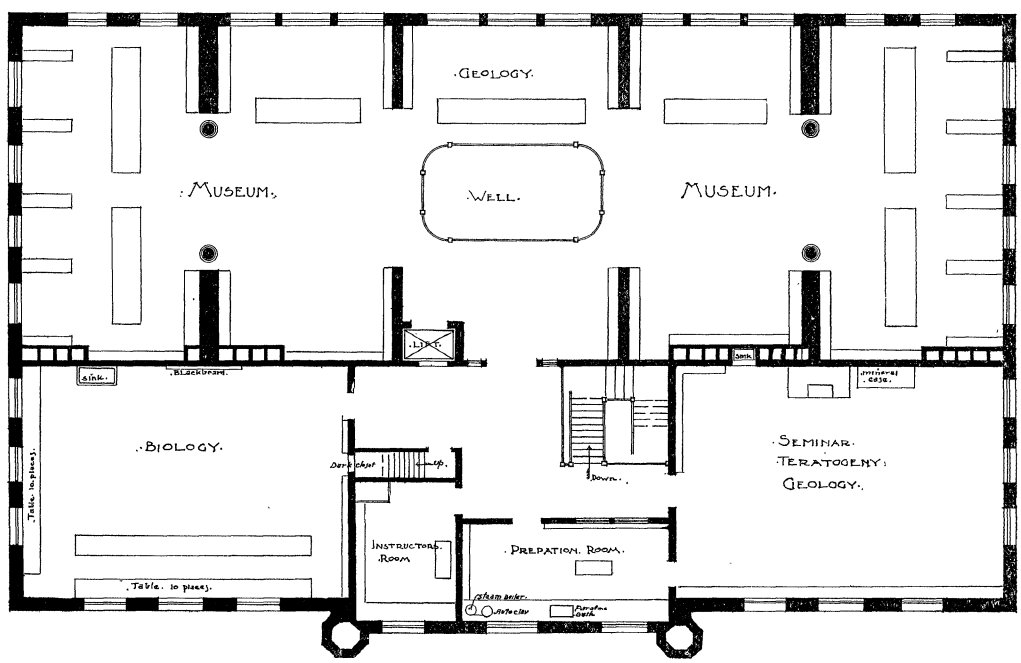


FIG. 3. Hall of Natural History.

"Moreover, there can be no doubt of this success, for you will display there, you, your associates in labor and your pupils, the remarkable qualities of your race, and you will be with us in the vanguard in the great battle that we are fighting without truce for the discovery of the truth, a noble conflict in which all the combatants participate in the advantages of victory, and which causes to flow neither blood nor tears.

"YVES DELAGE."

PROFESSOR OF ZOOLOGY AND COMPARATIVE ANATOMY, UNIVERSITY OF PARIS, FRANCE.

"I wish your new Hall of Natural History the very best success. I am

"Yours very respectfully,

"PROFESSOR DR. ANTON DOHRN."

ZOOLOGICAL STATION, NAPLES, ITALY.

"I send you my best wishes for the opening of your new Natural History Institute in Trinity College, and hope it will bring to maturity many advances in the investigation of the grand treasures of Nature of your beautiful country, which I had the pleasure of becoming acquainted with last year. With greatest esteem,

"Yours truly,

PROFESSOR D. A. FOREL."

ZURICH, SWITZERLAND.

"Thank you very much for the sending of your program of instruction, which I have read with the greatest interest. I congratulate you upon the problem which you have set for yourself; that zoology and anatomy can only gain when they are permeated by physiological and general biological principles, is, alas, not yet recognized to any extent. Only in botany is recognized the natural union of form and function in teaching, and there but to a slight degree; this has found expression in the splendid book of Haberlandt, 'Physiological Anatomy.' Mineralogy and geology in Zurich have undergone a similar process.

"To the anatomist and zoologist on the contrary, the comparative method is allowed, and the so-called 'purely mechanical' points of view are repudiated.

"Yours truly,

"MAX VON FREY."

UNIVERSITY OF WÜRZBURG, GERMANY.

"May the Hall of Natural History be a complete success—fulfilling all the aspirations of its founders and well-wishers! Had it been possible it would have afforded me much pleasure and satisfaction to have been present at your opening function. All I can do now is to wish the institution and yourself Godspeed!

"Yours very truly,

"JAMES GEIKIE."

UNIVERSITY OF EDINBURGH, SCOTLAND.

"I should have been happy to express personally to you my great admiration for the powerful scientific movement taking place in the United States of America, the proof of which is given by the erection of so many splendid universities. I send you my heartiest wishes that the Biological Laboratory of Hartford may soon produce numerous and excellent works in all branches of modern biology. Believe me, dear sir,

"Yours very sincerely,

"A. GIARD."

MEMBRE DE L'INSTITUT DE FRANCE.

"In reply to your invitation I wish to send, in my absence, a few words of hearty greeting on the occasion of the opening of your Hall of Natural History. I hold it an imperative duty of the minister of every denomination of religion to seek to understand the modes of thought of his flock. And considering the way biological progress has influenced man's way of looking at things generally, it seems to me that its study is one specially necessary for the ministry. The work of the churches or great social bond of union and progress in humanity is one we all recognize. That men anxious and willing to work for this end should have had their services unutilized in the past—the very recent past—through the lack of understanding of the theologians is a fact to be deeply regretted. And the new foundation in your college should make for charity in human fellowship, through and with the advancement of human knowledge. I am, gentlemen,

"Faithfully yours,

"MARCUS HARTZOG, D.SC., M.D., F.L.S."

PROFESSOR OF NATURAL HISTORY, QUEEN'S COLLEGE, CORK, IRELAND.

"The natural sciences, and not in the least biology, have in a few decades developed remarkably in the United States. Proof of this are the newly founded, splendidly equipped universities, natural history museums, marine biological stations, and recently published journals, by means of which science has already experienced so many additions due to American research.

"That the newly erected 'Hall of Natural History of Trinity College,' placed under your guidance, may

develop to a worthy home of the natural sciences, I wish from all my heart.

"Yours truly,

"Dr. Oscar Hertwig."

University of Berlin,
Germany.

"I express my interest in the erection of your institute. Its creation will be a new proof of the successful zeal with which the younger school of your country is occupied to further scientific progress in unconfined research, as well as in the dissemination of knowledge. With the most respectful greetings,

"Yours truly,

"William His."

University of Leipzig,
Germany.

"You may perhaps be surprised to hear that I passed two very happy years of my boyhood in Hartford, attending the high school, and that I still count among my best friends a number of Hartford people. You may, therefore, imagine with what satisfaction I learned that in the city with which my personal relations, so to speak, are very intimate, a hall has been established in which the subjects in my own special lines are to be studied. I congratulate the city, the College and you on the completion of the Hall of Natural History, and hope that it will become a center of scientific activities and will do its full share in the advancement of knowledge, as it no doubt will. With best wishes, I remain

"Yours sincerely,

"K. Mitsukuri."

Imperial University,
Tokio, Japan,

"I have much pleasure in sending you my best wishes for the new Hall of Natural History at Trinity College, Hartford. May it have a long, useful and prosperous career. May it train many men to do good and honest work in natural history, that most delightful of the sciences, and may financial blight—that curse of so many scientific undertakings, never fall upon it! I much regret that I cannot myself be present on the occasion to offer my congratulations in person.

"It is now exactly a quarter of a century since I began the study of Natural History under that brilliant zoologist, that truly great and distinguished man, Francis Maitland Balfour. The lessons I learnt from him I would fain teach to others, and it has always been my endeavor to do so. The most important of them were—thoroughness and honesty in work, the realization of the fact that no scientific work is worth doing unless it be done primarily for the sake of the work, and not primarily for the sake of the worker. The realization of this fact is the most important result which a sound education can produce.

"I cannot wish you anything better than this—that the work done in your institution may be honest work, sound work, work which men of all countries and all languages who are seeking after truth may turn to with confidence, that there at least they will find the real thing—an honest record of painstaking observation.

"In other words, may your institution be the means of training men to work like Johannes Müller, Charles Darwin, Thomas Henry Huxley, Albert Kölliker, Elias Metschnikoff and Francis Maitland Balfour. I am, dear sir,

"Yours sincerely,

"Adam Sedgwick."

Reader in Morphology and Embryology of Animals, Trinity College, University of Cambridge, England.

"I pledge you my sincerest wishes for the new Hall of Natural History of Trinity College. May it take its place in contributing to the greatest researches which the United States have produced in the last decennium for our sciences, and which have stirred up the admiration, yes, I may say, the envy of the entire Old World. With this wish, I remain, in greatest esteem,

"Yours truly,

"Dr. J. W. Spengel."

University of Giessen,
Germany.

"I express my admiration and forcible acknowledgment of how zealous your countrymen in the great country of the United States are to further science in every direction; I wish Trinity College and especially its scientific institutes the greatest success and development.

"Most respectfully yours,

"Waldeyer."

University of Berlin,
Germany.

"Kindly accept my wishes for the success of this solemnity and for the ever progressive development of the knowledge of truth, as well as of the spirit of research in your university.

"I beg you, sir and your colleagues, to accept the expression of my cordial appreciation.

"Emile Yung."

Professor of Zoology and of Comparative Anatomy in the University of Geneva,
Switzerland.

In addition letters were received from:

Professor Henry Blanc, University of Lausanne, France.

Professor Wilhelm Blasius, University of Braunschweig, Germany.

Professor O. Bütschli, University of Heidelberg, Germany.

Professor Carl Chun, University of Leipzig, Germany.

Professor E. Ehlers, University of Göttingen, Germany.

Sir Michael Foster, University of Cambridge, England.

Professor A. A. W. Hubrecht, of Utrecht, Holland.

Professor Alexander Kovalevskij, St. Petersburg, Russia.

Professor W. N. Parker, University College, Cardiff Wales.

Professor E. B. Poulton, University of Oxford, England.

Professor Dr. Louis Roule, University of Toulouse, France.

Professor G. O. Sars, Christiania, Norway.

Professor Dr. Franz Eilhard Schulze, University of Berlin, Germany.

Professor Aleksandr Andrejevid Tichomirov, University of Moscow, Russia.

Professor Sydney Howard Vines, University of Oxford, England.

Professor S. Watasé, University of Tokio, Japan.

Professor R. Wiedersheim, University of Freiburg, Germany.

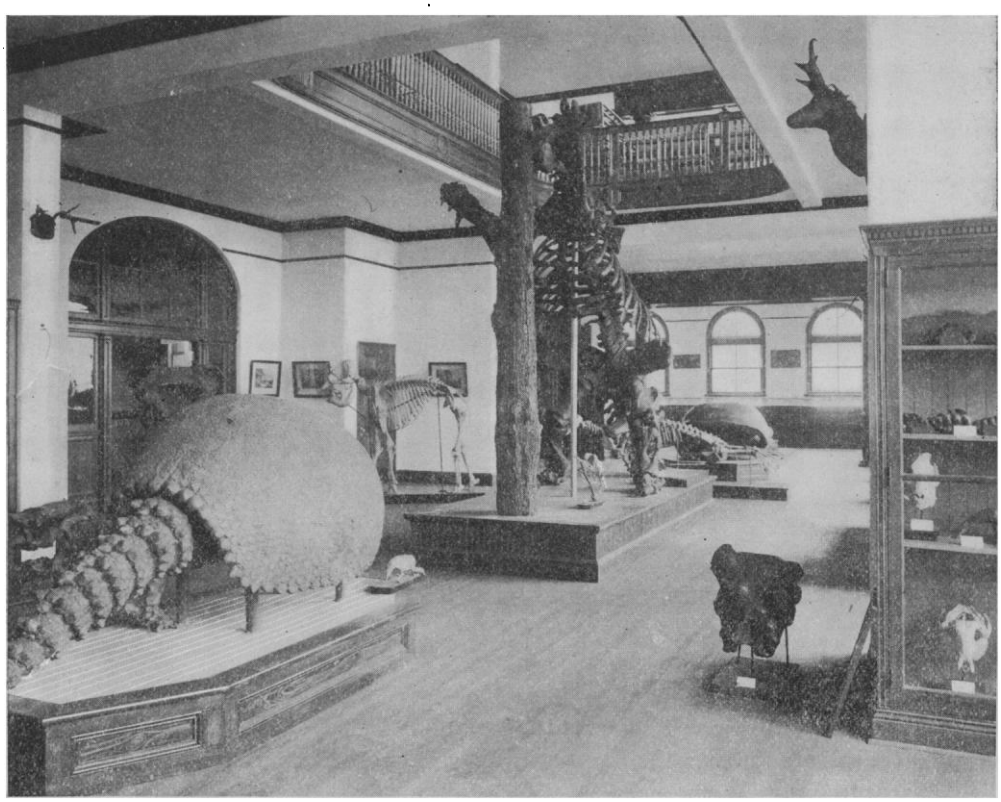


FIG. 4. Museum.

Professor Hubert Ludwig, University of Bonn, Germany.

Professor H. N. Mackintosh, Trinity College, Dublin, Ireland.

Professor K. Möbius, University of Berlin, Germany.

THE HALL OF NATURAL HISTORY.

The building having a frontage to the north of 122 feet, and a width of 72 feet, is three stories high above an ample basement. The materials used are common

brick, molded brick and sandstone for finish.

In plan the building is a parallelogram, with a central projection 40 feet wide, flanked by octagonal turrets extending through the several stories and finished above the main roof line. The principal entrance gives access to a wide staircase hall. Directly opposite this entrance is the doorway to the Museum.

The Museum occupies three floors, the two upper ones having each an area of over 4,650 square feet, the first floor being connected with the second by an iron staircase and a large floor-well, which forms a feature in the construction of the second floor. The whole Museum has a southern exposure and is adequately lighted.

The arrangement of rooms is shown in the accompanying diagrams.

A feature of the equipment is the aquarium and vivarium rooms in the basement. In the aquarium there are five tanks, each containing 290 gallons, paneled off from the main room as in the Berlin, Washington, Battery Park and other aquaria. Thus the public can see the animals under the most favorable conditions, while in the aquarium section the students may work at problems in comparative physiology and comparative psychology without being disturbed. Three of the tanks are for marine and two for fresh-water animals and plants. The great advantage, as an adjunct to teaching, of having alive such animals as medusæ, star-fish, sea-cucumbers and anemones is apparent to

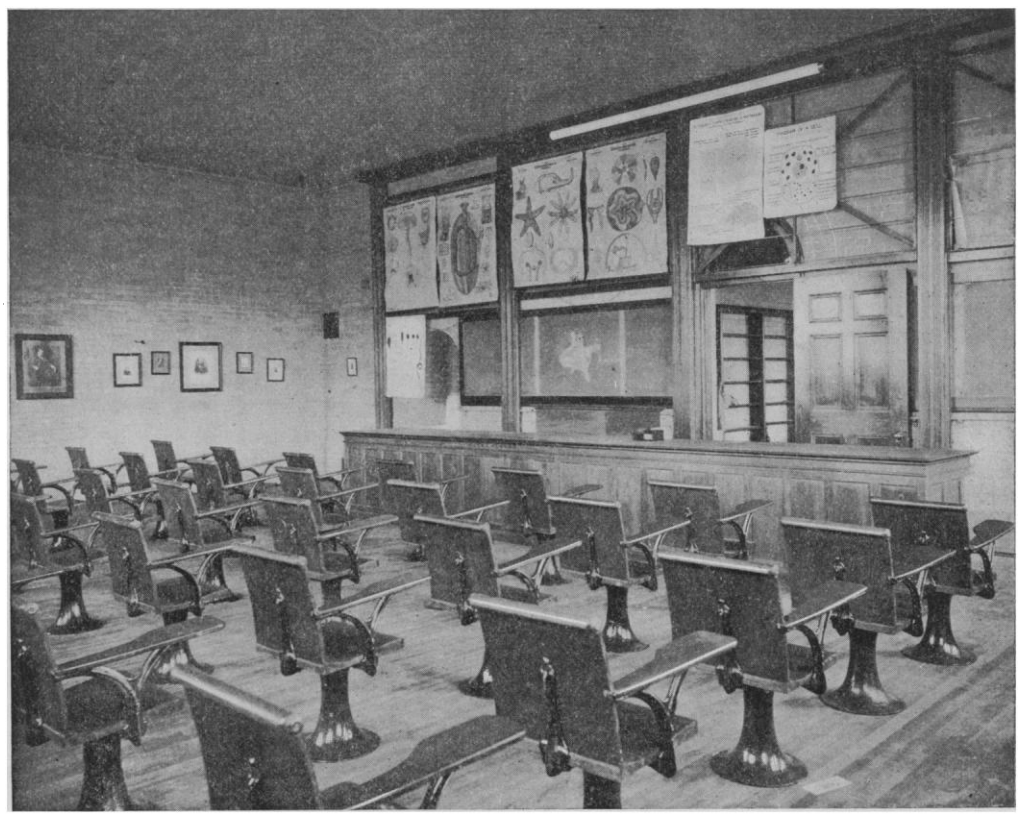


Fig. 5. Lecture Room.

anyone who has attempted to gain a natural conception of such forms from only alcoholic material. In the attic is a large pigeon house for breeding purposes. Glass beehives and ant nests are used for the study of community life. In fact, it is planned to have every order of animals represented by typical species in the aquaria and vivaria, so that the study of function may go hand in hand with the study of form.

In the museum each order is represented by specimens in alcohol, skins, skeletons, a dissection accompanied by a water-color sketch, with all the parts plainly labeled and embryological models with explanatory charts, in order that the visitor or student may learn as much as possible of the forms exhibited rather than become overwhelmed with the wealth of species.

AN ARTIFICIAL REPRESENTATION OF A TOTAL SOLAR ECLIPSE.

IN preparing for polarization experiments on the solar corona it is extremely desirable to have an artificial corona as nearly as possible resembling the reality, for preliminary work. The only device of the kind that has been used to my knowledge is the arrangement described by Wright in his eclipse report, consisting of a cardboard funnel, lined with black cloth, with a light at the back. This gives a ring-shaped illuminated area radially polarized. It is believed that the contrivance about to be described will be found far better adapted to work of this sort, for the artificial corona in this case resembles the real so closely as to startle one who has actually witnessed a total solar eclipse; the polarization is radial, and is produced in the same way as in the sun's surroundings, and the misty gradations of brilliancy are present as well. So perfect was the representation that I added several features of purely æsthetic nature, to heighten the effect, and finally succeeded in getting a reproduction of a solar eclipse which could hardly be distinguished from the reality, except that the polar streamers are straight as drawn by Trouvelot, instead of being curved, as all the recent photographs show them. The curious greenish-blue color of the sky and the peculiar pearly luster and misty appearance are faithfully reproduced. For lecture purposes an artificial eclipse of this sort would be admirably adapted, and I know of no way in which an audience could be given so vivid an idea of the beauty of the phenomenon. Drawings and photographs are wholly inadequate in giving any notion of the actual appearance of the sun's surroundings, and I feel sure that any one will feel amply repaid for the small amount of trouble necessary in fitting up the arrangement which I shall describe.

A rectangular glass tank about a foot square on the front and five or six inches wide, and a six-candle-power incandescent lamp are all that are necessary The dimensions of the tank are not of much importance, a small aquarium being admirably adapted for the purpose. The tank should be nearly filled with clean water, and a spoonful or two (the right amount determined by experiment) of a weak alcoholic solution of mastic should be added. The mastic is at once thrown down as an exceedingly fine precipitate, giving the water a milky appearance. The wires leading to the lamp should be passed through a short glass tube, and the lamp fastened to the end of the tube with sealing wax, taking care to make a tight joint, to prevent the water from entering the tube. (Fig. 1.) Five or six strips of tin foil are now fastened with shellac along the sides of the lamp,

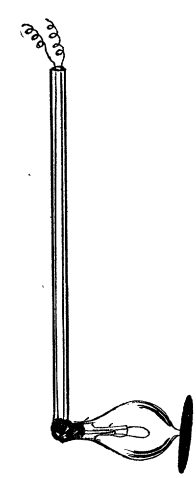


FIG. 1.